**Additional Practice Problems - Unit 9**

**Quiz #1 – Kinetic Molecular Theory & Properties of Gases**

1. What does the Kinetic Molecular Theory say?
2. Describe gas particle size relative to the space between the particles.
3. How do gas particles move?
4. Is the density of gases high or low?
5. What is diffusion?
6. What is effusion?
7. What is air pressure?
8. List the 4 units of pressure, their abbreviations, and their conversion factors.
9. Convert 500 kPa to atmospheres.

**Quiz #2 – Gas Laws**

1. As pressure goes up, volume goes \_\_\_\_\_\_\_\_\_\_ according to \_\_\_\_\_\_\_\_\_\_ Law. What is the equation?
2. As temperature goes down, volume goes \_\_\_\_\_\_\_\_\_\_according to \_\_\_\_\_\_\_\_\_\_ Law. What is the equation?
3. According to \_\_\_\_\_\_\_\_\_ Law, as temperature increases, pressure \_\_\_\_\_\_\_\_\_\_. What is the equation?
4. A 2.0 L sample of gas at a temperature of 50oC is compressed to 0.5 L. What is the new temperature of the gas?
5. A 25.0 L sample of gas is at a pressure of 1.50 atm. If the volume is increased to 32.0 L, what is the new pressure of the gas?
6. At 100oC, a sample of gas has a pressure of 5.00 atm. If the pressure is increased to 7.25 atm, what is the temperature of the gas?

**Quiz #3 – Combined & Ideal Gas Laws**

1. When using the Ideal Gas Las, pressure must be measured in \_\_\_\_, volume must be measured in \_\_\_\_, temperature must be measured in \_\_\_\_, and amount of gas must be measured in \_\_\_\_.
2. Write the equation for the Combined Gas Law and the Ideal Gas Law.
3. A sample of gas is stored in a 1.5 L flask at 800.0 mm Hg and 25.0oC. What is the volume of the gas at STP?
4. Calculate the grams of oxygen gas present in a 500 mL sample kept at 2.00 atm pressure and a temperature of 25.0oC.

**Quiz #4 – All Gas Laws**

1. A gas mixture contains oxygen, nitrogen, and methane. The total pressure of the mixture is 50.0 kPa. If the pressure of the oxygen gas is 13.0 kPa and the pressure of the methane gas is 24.8 kPa, what is the pressure of the nitrogen gas?
2. A 50.0 mL sample of gas at a temperature of 25.0oC is compressed to 18.0 mL. What is the new temperature of the gas?
3. A 100.0 mL sample of gas is at a pressure of 3.20 atm. If the volume is decreased to 55.0 mL, what is the new pressure of the gas?
4. At 100oC, a sample of gas has a pressure of 730.0 mm Hg. If the pressure is increased to 820.0 mm Hg, what is the temperature of the gas?
5. A sample of gas is stored in a 25.0 mL flask at 5.00 atm and 50.0oC. What is the volume of the gas at STP?
6. Calculate the grams of carbon dioxide gas present in a 25 mL sample kept at 4.00 atm pressure and a temperature of 56.0oC.

**Quiz #5 – Gas Stoichiometry**

\_\_\_\_H2(g) + \_\_\_\_O2(g) 🡪 \_\_\_\_H2O(g)

1. Balance the equation above.
2. What is the volume ratio of oxygen gas to water vapor?
3. How many moles of water vapor can form from 5.0 L of oxygen gas at 250 K and 3.0 atm pressure?
4. Calculate the volume of hydrogen gas needed to react with 34.5 g oxygen gas at STP.